

# Study Spotlight: Assessing the visual and functional outcomes of ZEISS AT ELANA 841P



Seeing beyond

AT ELANA® provides full-range of field and reliable visual outcomes across all distances leading to high levels of patient satisfaction.

## Source



### Title

Visual and functional outcomes of a new diffractive trifocal intraocular lens with smooth micro phase technology in patients undergoing cataract surgery



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### Publication

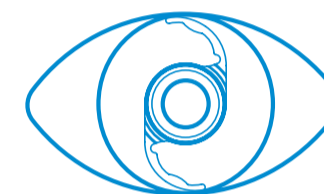
*International Journal of Ophthalmology*. Vol 18, No. 12 Dec.18, 2025. <https://www.sciopen.com/article/pdf/10.18240/ijo.2025.12.07.pdf>

## Methodology

### Bilateral implantation of AT ELANA 841P in 23 patients undergoing cataract surgery

- Prospective, single-arm, single-center, observational study
- IOL power calculations with Barrett Universal II formula (manufacturer's A-constant of 119.5)
- Monocular/binocular corrected and uncorrected visual acuity at distance (6m), intermediate (66cm) and near (40cm)
- Monocular defocus curve at 1-month, binocular defocus curve at 3 months
- Binocular and monocular contrast sensitivity under photopic conditions at 3 months
- Patient-reported outcomes using Catquest-9SF questionnaire at 3 months

### Sample size



23 patients/46 eyes (1 month follow-up)  
21 patients/42 eyes (3 months follow-up)  
Mean age: 59.86 years

Exclusion: Pre-op corneal astigmatism > 0.75D

## Results

### Refraction & Visual Acuity (VA)

At 3 months post-operatively, the mean spherical equivalent (SE) was  $0.08 \pm 0.44$  D, with **95% of eyes within  $\pm 0.50$  D** of SE target refraction and **100% within  $\pm 0.50$  D of cylinder**. Mean **monocular and binocular uncorrected visual acuities** for distance (6m) intermediate (66cm) and near vision (40cm) were **excellent** as shown in table 1.

Visual Acuity	Monocular (n=21 eyes)	Binocular (n=21 patients)
UDVA	$-0.04 \pm 0.07$ (-0.18/0.04)	$-0.13 \pm 0.08$ (-0.30/-0.02)
UIVA	$0.13 \pm 0.15$ (-0.10/0.36)	$0.03 \pm 0.12$ (-0.14/0.30)
UNVA	$0.21 \pm 0.13$ (0.00/0.46)	$0.11 \pm 0.11$ (-0.02/0.32)

Table 1: Visual acuity (logMAR) at 3-months post-op (shown as means, standard deviations and ranges) UDVA: Uncorrected distance visual acuity; UIVA: Uncorrected intermediate visual acuity; UNVA: Uncorrected near visual acuity

### Defocus Curve Performance

At 1 month, the mean **monocular defocus curve** demonstrated VA of **0.20 logMAR** or better across a defocus range **from -3.00 D to +1.50 D**, indicating that AT ELANA provides a full-range of field (RoF, red lines in figure 1).

At 3 months, the **binocular defocus curve** (figure 2) showed a **peak in mean VA at 0.0 D ( $-0.14 \pm 0.07$  logMAR)**, then, a gradual decline to  $0.00 \pm 0.08$  logMAR at 66cm, finally reaching  **$-0.01 \pm 0.09$  logMAR at -2.5 D (40 cm)**.

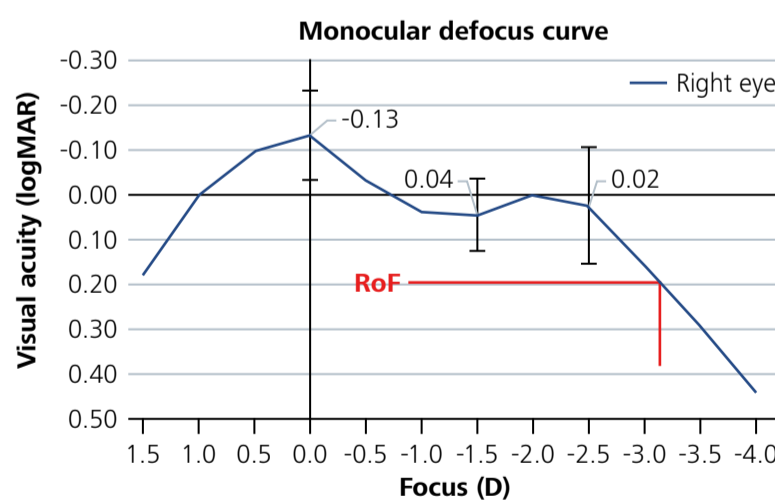


Figure 1: Monocular defocus curve at 1-month post-op (n=23 patients)

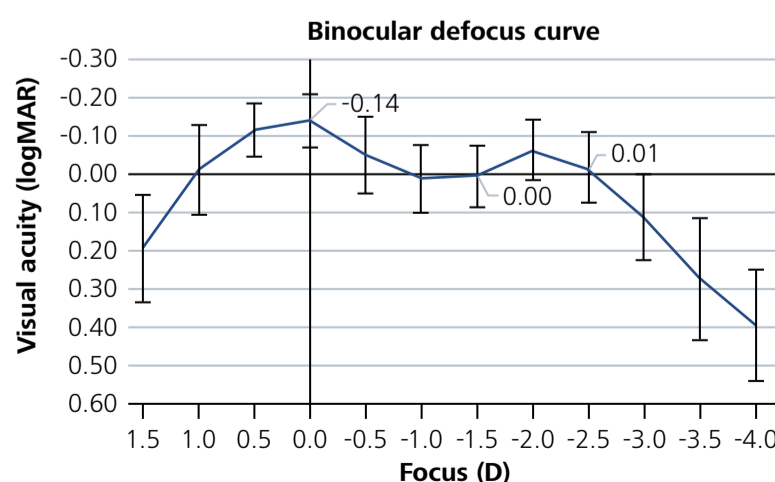


Figure 2: Binocular defocus curve at 3-months post-op (n=21 patients)

### Contrast Sensitivity (CS)

At the 3-month follow-up, **binocular CS** testing showed **strong performance at low spatial frequencies** (3 & 6 cpd) with a moderate decline at higher frequencies (12 & 18 cpd). A **similar pattern** was observed in **monocular measurements** (figure 3).

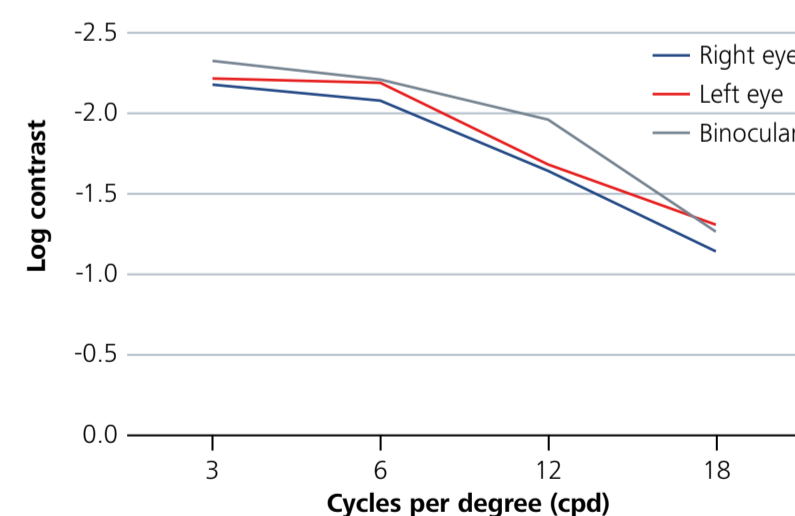


Figure 3: Contrast sensitivity function under photopic conditions at 3-months post-op

### Patient Satisfaction (Catquest 9SF)

**100%** of available patients at the 3-month follow-up visit (n=21) reported being **fairly or very satisfied** with their vision. In addition, **all patients reported no to some difficulty in their daily life activities**.